

Pollinator Diversity and Forage Resources in Agroecosystems: Implications for Sustainable Beekeeping in the Philippines

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INTRODUCTION

Pollinators play a crucial role in maintaining biodiversity and supporting agricultural productivity. However, there is **limited data on pollinator diversity and forage resources in agricultural and agroforestry areas in the Philippines**. This study aimed to assess the diversity of pollinators and their forage plants in the UPLB La Granja Research and Training Station (LGRS) in Negros Occidental and the UP Land Grant in Pakil, Laguna.

METHODOLOGY

Sampling Methods

🕒 Observation: 07:00 - 15:00 📅 Once a week, 7 months



Pan Traps



Net Sweeping



Sampling from Opportunistic Plants



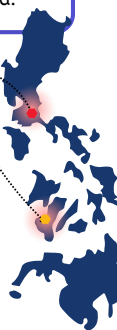
Malaise Traps



Bee-keeping Trainings

A bee pasture was developed in the sites to support pollinator populations alongside the introduction of stingless bees. Observations were integrated into **Bee-keeping Training Programs** to enhance local knowledge and participation in the community.

UP Land Grant, Laguna
UPLB LGRS, Negros Island



RESULTS AND DISCUSSION

Pollinator Inventory

Records Before Bee Pasture Development



Carpenter Bees Halictid bees Moths Beetles

Records After Bee Pasture Development



Thyreus sp. Megachile sp. Amegilla zonata



Xyllocopa sp. Tetragonula biroi Apis sp.

✅ The introduction of Stingless bees was successful in the sites.

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Dipterans or flies, wasps: *Crabronidae*, *Scoliidae*, *Sphecidae*, and *Polistinae*, moths and butterflies of the families *Nymphalidae*, *Erebidae*, *Pieridae*, and *Pterophoridae*, Tetrigids, and Chrysomelid beetles.

Forage Resources

Fruit trees*



Mango *Mangifera indica* Pomelo *Citrus maxima*



Jackfruit *Artocarpus heterophyllus* Durian *Durio zibethinus*



Rambutan *Nephelium lappaceum* Santol *Sandoricum koetjape*

Woody plants



Katmon *Dillenia philippinensis* Coconut *Cocos nucifera*

Herbaceous plants



• *Musa sapientum*
• *Sphagnetocola trilobata* - visited by *Apis dorsata*

Organically grown vegetables



Okra *Abelmoschus esculentus* Eggplant *Solanum melongena* Chili pepper *Capsicum frutescens* String beans *Phaseolus vulgaris*

Population Density

📈 Pollinators peaked at **09:00 to 11:00** in the morning, attributed to the period of **anthesis** of forage sources.

Other introduced and native ornamental plants

The presence of *Boerhavia diffusa*, *Cleome rutidosperma*, *Spatiphyllum commutatum*, *Hamelia patens*, *Duranta erecta*, *Talinum fruticosum*, *Ocimum basilicum*, *Melothria indica*, *Tabernaemontana* sp., *Vitex negundo*, *Zinnia* sp., *Cosmos sulphureus*, and *Cuphea hyssopifolia* were recorded.

CONCLUSION AND RECOMMENDATIONS

The study highlights the importance of maintaining diverse floral resources for sustaining pollinator populations. Beekeepers can enhance honey production and pollination services by integrating native bee plants and promoting stingless beekeeping as an alternative livelihood, particularly in areas where traditional farming is declining.



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Pollinators play a crucial role in maintaining biodiversity and supporting agricultural productivity. However, there is limited data on pollinator diversity and forage resources in agricultural and agroforestry areas in the Philippines. This study aimed to assess the diversity of pollinators and their forage plants in the UPLB La Granja Research and Training Station (LGRTS) in Negros Occidental and the UP Land Grant in Pakil, Laguna. Pollinator populations are under threat due to habitat loss, pesticide use, and land-use changes. Understanding the local diversity of pollinators and their floral resources is essential for conservation and sustainable agricultural practices. This study sought to identify pollinator species and the floral resources they utilize in these agroecosystems. Pollinators were sampled using sweep nets, pan traps, malaise traps, and opportunistic flower observations between 07:00 and 15:00. Pollinator species were identified, and their behaviors were recorded. The floral resources visited by pollinators were also documented. In addition, stingless bee colonies were introduced to assess their adaptation and contribution to pollination. The study recorded a diverse range of pollinators, including native bee species (*Tetragonula biroi*, *Amegilla* sp., *Xylocopa* sp.), butterflies, beetles, and flies. Pollinators showed peak activity between 09:00 and 11:00 AM, correlating with floral anthesis. Key forage plants included *Mangifera indica*, *Citrus maxima*, *Vitex negundo*, and *Tithonia diversifolia*. The introduction of stingless bee colonies was successful, with some colonies expanding. The study highlights the importance of maintaining diverse floral resources for sustaining pollinator populations. Beekeepers can enhance honey production and pollination services by integrating native bee plants and promoting stingless beekeeping as an alternative livelihood, particularly in areas where traditional farming is declining.